AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated below.

1. (Currently Amended) A three-dimensional flow cell for aligning non-isometric particles in a liquid sample in two axes, comprising:

a feed zone (Z1) for the sample containing non-isometric particles to be aligned,

an expansion zone (Z2), in which each volume element of the liquid sample is expanded in two axes, in contact with the feed zone (Z1),

a measurement zone (Z3), in which a reflectance measurement of the liquid sample aligned in two axes is carried out, in contact with the expansion zone (Z2), and

an outlet zone (Z4), from which the liquid sample exits, in contact with the measurement zone (Z3),~~for the sample containing non-isometric particles aligned in two axes,~~

wherein a fluid element of the sample with the dimensions a, b, c ~~being~~is transformed in ~~an~~the expansion zone (Z2) into a fluid element with the dimensions a x n, b/(n x m), c x m, a being the width, b the height and c the length of the fluid element and n and m being constants which depend on the geometry of the flow cell and ~~which signify positive numbers ≥ 1~~ wherein n is 1.5 to 7.

Claims 2-22. (Canceled)

23. (Previously Presented) The three-dimensional flow cell as claimed in claim 1, wherein n = m.

24. (Currently Amended) A method of aligning non-isometric particles in a liquid sample~~,~~ in two axes, comprising the step of passing the liquid sample ~~flowing~~ through a three-dimensional flow cell ~~as claimed in claim 1~~, wherein a fluid element of the liquid sample with the dimensions a, b, c is transformed into a fluid element with the dimensions a x n, b/(n x m), c x m, a being the width, b the height and c the length of the fluid element and m and n being constants which depend on the geometry of the flow cell and ~~which signify positive numbers ≥ 1~~ wherein n is 1.5 to 7.

25. (Previously Presented) The method as claimed in claim 24, wherein n = m.

26. (Canceled)

27. (Currently Amended) A photometric measuring device for measuring the level of attenuation in the propagation of light in a liquid sample containing non-isometric particles, comprising ~~a~~ the three-dimensional flow cell ~~for aligning the particles in the liquid sample in two axes~~ as claimed in claim 1.

28. (Currently Amended) The photometric measuring device as claimed in claim 27, wherein the photometric measuring device is ~~comprising~~ a reflectance sensor.

29. (Currently Amended) ~~The~~ A reflectance sensor ~~as claimed in claim 28~~, comprising

a) an optical unit (A), which comprises

aa) a light source (Aa) in the form of a lamp, and

ab) an optical waveguide (Ab) comprising fiber optics, at least one optical waveguide being a reference waveguide[[,]];

b) a sample analysis unit (B), which comprises

ba) a measuring window (Ba), and

bb) a sample analysis cell ~~with~~comprising the three-dimensional flow cell ~~(Bb)~~ of claim 1,

wherein the liquid sample measuring zone (Z3) is defined by a gap between the measuring window (Ba) and the three-dimensional flow cell, and

~~wherein~~ the optical unit is arranged on ~~one~~the side of the measuring window opposite the measuring zone (Z3);

~~and the sample analysis cell with three-dimensional flow cell is arranged on the other side of the measuring window, by said cell being pressed against the measuring window in such a way that a gap is formed between the measuring window and sample analysis cell, which gap a liquid sample to be measured containing non-isometric particles must traverse, the liquid sample to be~~

~~measured being led up to the gap through the three-dimensional flow cell, which is arranged upstream of the gap, in a special flow guide,~~

and

c) a system control unit (C) comprising one or more detectors (Ca) for recording measured data and an evaluation device (Cb) connected thereto,

at least one optical waveguide connection being led from the light source (Aa) to the measuring window (Ba) and from the measuring window (Ba) onward to the one or more detectors (Ca), to generate a measured signal, and at least one reference waveguide connection being led directly from the light source (Aa) to the one or more detectors (Ca) or from the measuring window (Ba) to the detector (Ca), to generate a reference signal.

30. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the lamp is selected from the group consisting of LEDs, gas discharge lamps and lamps with incandescent filaments.

31. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the lamp has an integrated shutter.

32 . (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the optical waveguides are fibers of 100 µm, 200 µm, 400 µm, 600 µm or 800 µm fiber diameter.

33. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the fiber used as a reference waveguide has a smaller diameter than the remaining optical waveguides.

34. (Currently Amended) The reflectance sensor as claimed in claim 29, further comprising at least one of the following features:

ac) a compensation filter arranged ~~behind the lamp~~between the lamp and the measuring window (Ba), which linearises the spectrum of the lamp in such a way that the difference between the highest and lowest intensity of the light emitted by the lamp is a maximum of a factor 4,

ad) an IR blocking filter, a condenser and a diffuser arranged between the lamp and the compensation filter,

~~arranged behind the lamp~~

ae) optical waveguides ~~guided~~ inside of protective tubes and supported over their entire length by means of a supporting frame,

af) ~~the~~ a reference waveguide ~~is led via~~ having a precise spacing element with incorporated diffuser arranged between the light source (Aa) and the detector (Ca)~~,~~ ~~and attenuated in a defined manner~~to maintain the full aperture angle.

~~ag) a compensation filter arranged behind the lamp, and an IR blocking filter, a condenser and a diffuser arranged between lamp and compensation[[,]] filter.~~

35. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the measuring window is a planar plate.

36. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the gap is 2 to 10 mm long and between 0.05 and 5 mm high.

37. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein, during the traverse of the liquid sample containing particles, considerable shearing of the sample takes place.

38. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the sample analysis cell (Bb) is removable.

39. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein the system control unit has detectors in the form of fiber-optic monolithic diode line sensors which permit a resolution of at least 15 bits.

40. (Previously Presented) The reflectance sensor as claimed in claim 29, wherein all the units of the reflectance sensor are accommodated in a common housing, in which ventilation and thermostat-regulated heat dissipation are carried out.

41. (Previously Presented) A method for measuring the reflectance of a liquid sample containing non-isometric particles, comprising:

i) forming a sample stream of a sample containing non-isometric particles with a defined thickness and defined alignment of the particles in the sample in two axes,

ii) irradiating the sample stream at one or more angles with electromagnetic radiation emitted by a light source, the electromagnetic radiation interacting with the sample and some of the radiation being reflected diffusely following interaction with the sample,

iii) receiving and registering the diffusely reflected radiation as a reflectance signal at a plurality of angles,

iv) receiving and registering a reference signal, the reference signal being electromagnetic radiation which is emitted by the same light source used to irradiate the sample stream but which does not interact with the sample,

wherein the reflectance signal and the reference signal are registered simultaneously.

42. (Currently Amended) A method according to claim 41 wherein the reflectance is measured by a reflectance sensor comprising

a) an optical unit (A), which comprises

aa) a light source (Aa) in the form of a lamp, and

ab) an optical waveguide (Ab) comprising fiber optics, at least one optical waveguide being a reference waveguide[[,]];

b) a sample analysis unit (B), which comprises

ba) a measuring window (Ba), and

bb) a sample analysis cell comprising the~~with~~ three-dimensional flow cell ~~(Bb)~~of claim 1,

wherein the liquid sample measuring zone (Z3) is defined by a gap between the measuring window (Ba) and the three-dimensional flow cell, and

~~wherein~~ the optical unit is arranged on ~~one~~the side of the measuring window opposite the measuring zone (Z3)~~and the sample analysis cell with three-dimensional flow cell is arranged on the other side of the measuring window, by said cell being pressed against the measuring window in such a way that a gap is formed between the measuring window and sample analysis cell, which gap a liquid sample to be measured containing non-isometric particles must traverse, the liquid sample to be measured being led up to the gap through the three-dimensional flow cell, which is arranged upstream of the gap, in a special flow guide~~,

and

c) a system control unit (C) comprising one or more detectors (Ca) for recording measured data and an evaluation device (Cb) connected thereto,

at least one optical waveguide connection being led from the light source (Aa) to the measuring window (Ba) and from the measuring window (Ba) onward to the one or more detectors (Ca), to generate a measured signal, and at least one reference waveguide connection being led directly from the light source (Aa) to the one or more detectors (Ca) or from the measuring window (Ba) to the detector (Ca), to generate a reference signal.

43. (Previously Presented) A method according to claim 41 wherein the reflectance of liquid pigment preparations containing non-isometric particles is determined during at least one of

a process stage during production, further processing and use of liquid pigment preparations, quality assessment during coating production, during the production of coatings by mixing various liquids for controlling a metering system, during coating production for automatically regulated color adjustment by means of tinting, in a coating installation which has a metering system for color pastes for matching the color of the coating , monitoring subsequent

color changes as a result of ageing or shear stressing of pigmented coatings or pigment pastes or monitoring product quality in ring mains of ring main installations.

44. (Currently Amended) The method of claim 41, wherein irradiation of the sample is carried out at one or more angles with electromagnetic radiation emi~~l~~tted by a light source and ~~an~~ receiving and registering of a reflectance signal is carried out at a plurality of angles.